

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 02/01325

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04L 27/38

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04L, H03L, H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9956442 A2 (ERICSSON, INC.), 4 November 1999 (04.11.99), page 10, line 3 - line 8, figure 3 --	1-6
X	EP 0734132 A2 (KABUSHIKI KAISHA TOSHIBA), 25 Sept 1996 (25.09.96), column 8, line 25 - line 45 --	1-6
X	EP 1021019 A1 (SONY INTERNATIONAL (EUROPE) GMBH), 19 July 2000 (19.07.00), page 8, line 45 - line 49, figure 6, claim 9 --	1-6

☒ Further documents are listed in the continuation of Box C.
 ☒ See patent family annex.

* Special categories of cited documents	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"B" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search	Date of mailing of the international search report
1 April 2003	14 -04- 2003
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Markus Stålö /OGU Telephone No. +46 8 782 25 00

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5684842 A (DAFFARA, F. ET AL), 4 November 1997 (04.11.97), column 5, line 54 - column 7, line 10, figure 10  --	13-16
A	US 5796786 A (LEE, M-H), 18 August 1998 (18.08.98), column 10, line 65 - column 11, line 4, figures 5-6C  -- -----	13-16

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## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see extra sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: 1-8 and 10-16
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.  
☐ No protest accompanied the payment of additional search fees.

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Since the invention according to claim 1 lacks novelty and does not involve an inventive step the remaining claims form four groups of inventions:

Invention I: Claims 2-8, 10-12 relating to a method to add a frame alignment word to the transmitted symbols, where the frame alignment word indicates the predetermined positions of symbols in a frame modulated according to a first or a second keying method.

Invention II: Claim 9 relating to a method to measure, calculate and determine which symbols, in a received frame, are modulated according to the first and second keying method.

Invention III: Claims 13-16 relating to a method to weight an error signal with a weighting function. The weighting function improves the Phase Locked Loop (PLL) in the receiver.

Invention IV: Claim 17 relating to a method to use forward error correction coding.

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Patent document cited in search report			Publication date	Patent family member(s)		Publication date
WO	9956442	A2	04/11/99	AU	755079 B	05/12/02
				AU	3637399 A	16/11/99
				BR	9910013 A	09/01/01
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				EE	200000622 A	15/02/02
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US	5684842	A	04/11/97	CN	1083196 B	17/04/02
				CN	1128923 A	14/08/96
				EP	0692896 A	17/01/96
				FR	2722630 A	19/01/96
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				EP	0769364 A	23/04/97
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				KR	155900 B	16/11/98

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